Appendix B
Meteorological Data

This section contains meteorological data derived from various regulatory and non-regulatory sites. The data provides a comparative analysis of winds speed, wind direction, wind gusts and concentration data. Please note that meteorological instruments measure at different heights, and at different time intervals. By taking, the actual time of measurement and assuring that all data represented is in Pacific Standard Time (PST) there is uniformity of the data. In addition, not all stations measure at the exact same time, i.e. measurements at 053 and 056 therefore, comparisons are measurements within a 60-minute period. While there may be some overlapping and slight differences the comparative analysis provides the reader with a better understanding of the regional effect of the Exceptional Event.

FIGURE B-1
POTENTIAL METEOROLOGICAL SITES USED IN EXCEPTIONAL EVENT DOCUMENTS

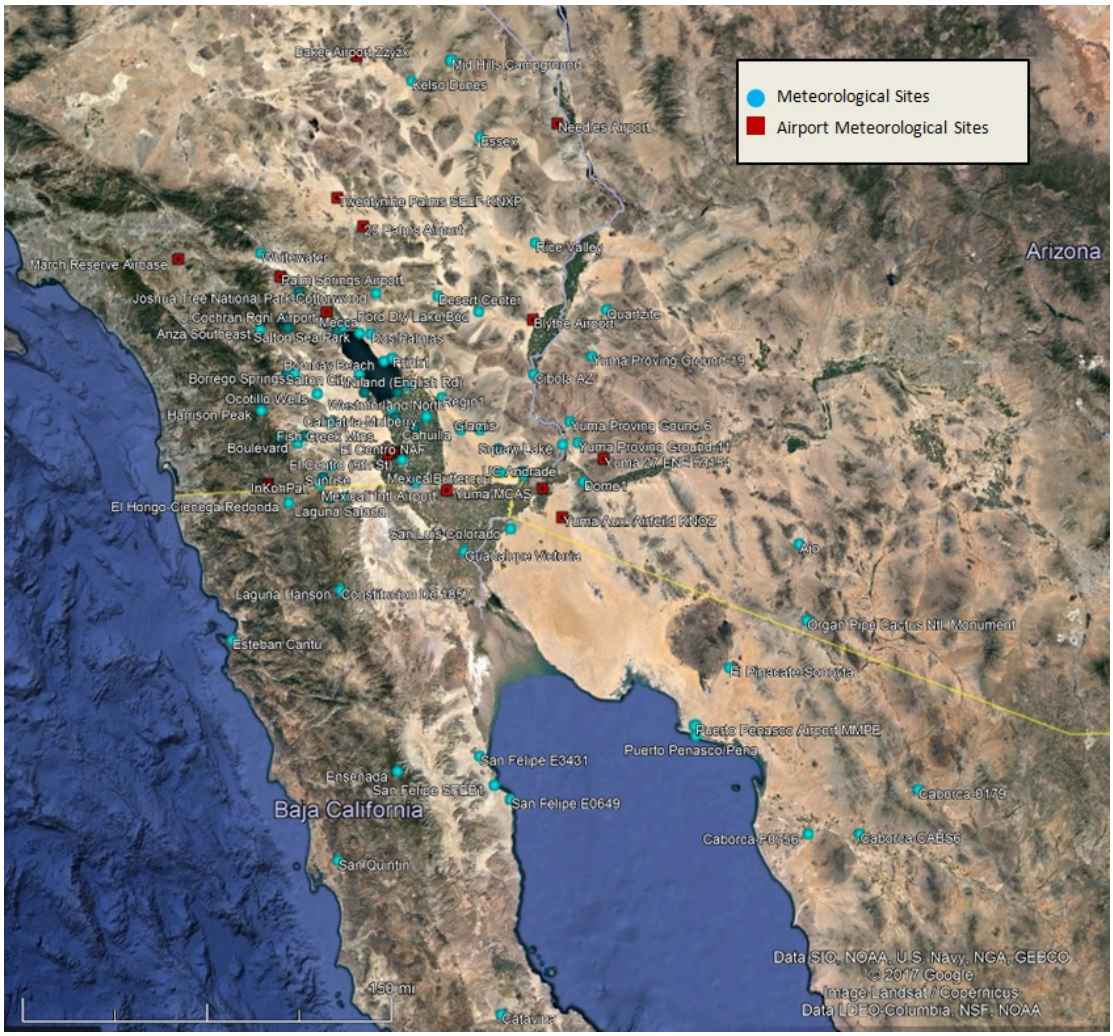


Fig B-1: Depicts all the sites from which the ICAPCD may potentially access meteorological data. Base map and larger locator map from Google Earth

IMPERIAL COUNTY SITES
B-2 THROUGH B-9

FIGURE B-2
IMPERIAL COUNTY AIRPORT (KIPL)
WIND SPEED, GUSTS & DIRECTION

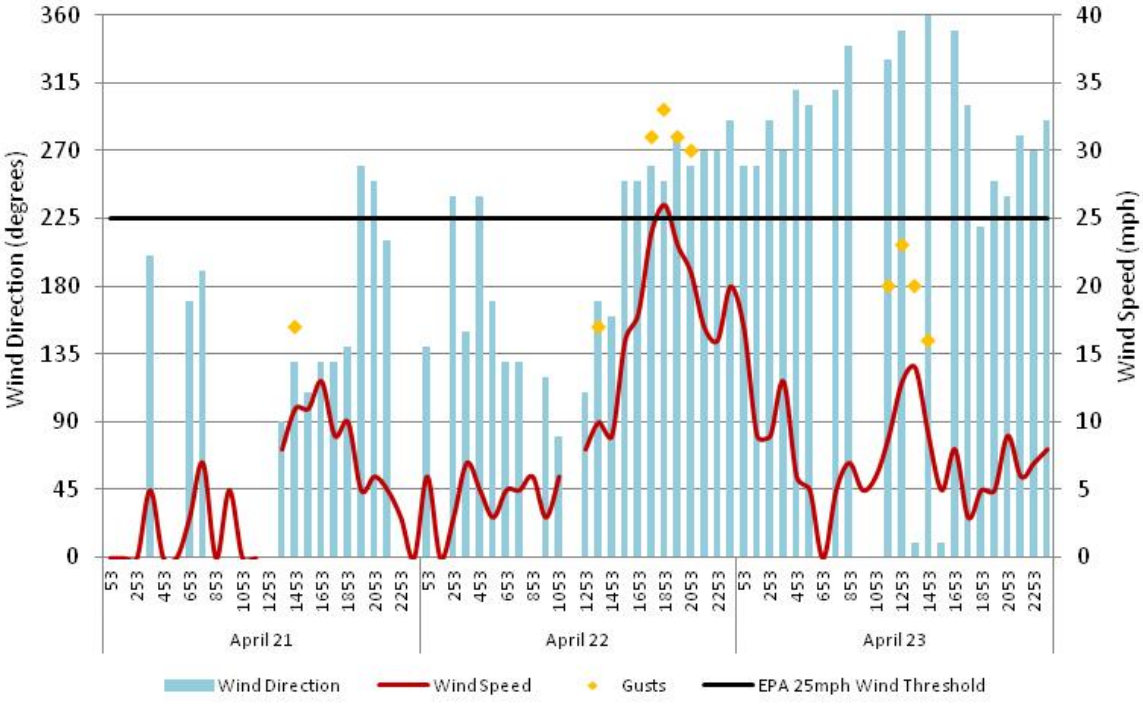
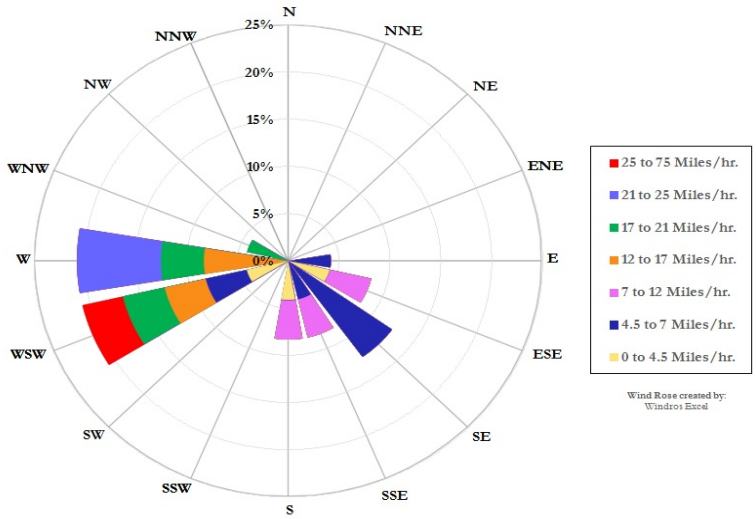


FIGURE B-3
KIPL WIND ROSE – APRIL 22, 2016



Figs B-2 & B-3: Imperial Airport (KIPL) meteorological data shows that both winds and gusts exceeded the 25 mph wind threshold. Data from the NCEI's QCLCD system

FIGURE B-4
EL CENTRO NAF (KNJK)
WIND SPEED, GUSTS & DIRECTION

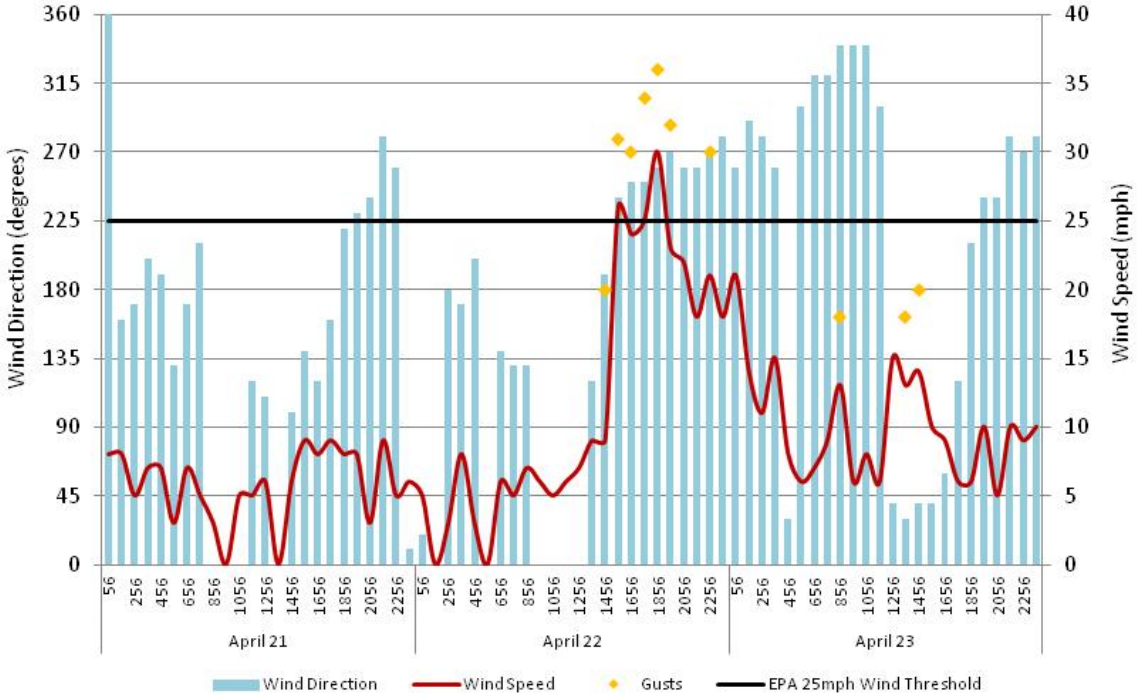
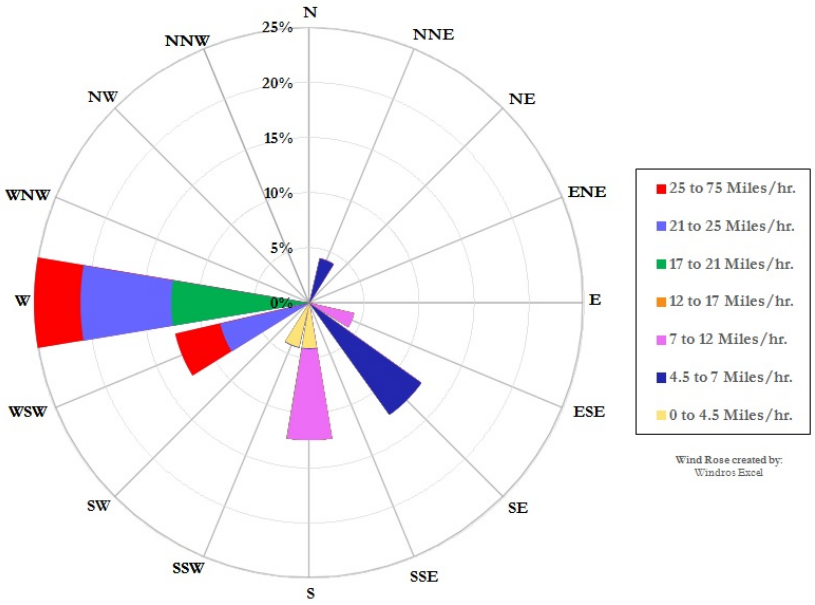


FIGURE B-5
KNJK WIND ROSE – APRIL 22, 2016



Figs B-4 & B-5: El Centro NAF (KNJK) meteorological data shows that both winds and gusts exceeded the 25 mph wind threshold. Data from the NCEI's QCLCD system

FIGURE B-6
CALEXICO WIND SPEED & DIRECTION

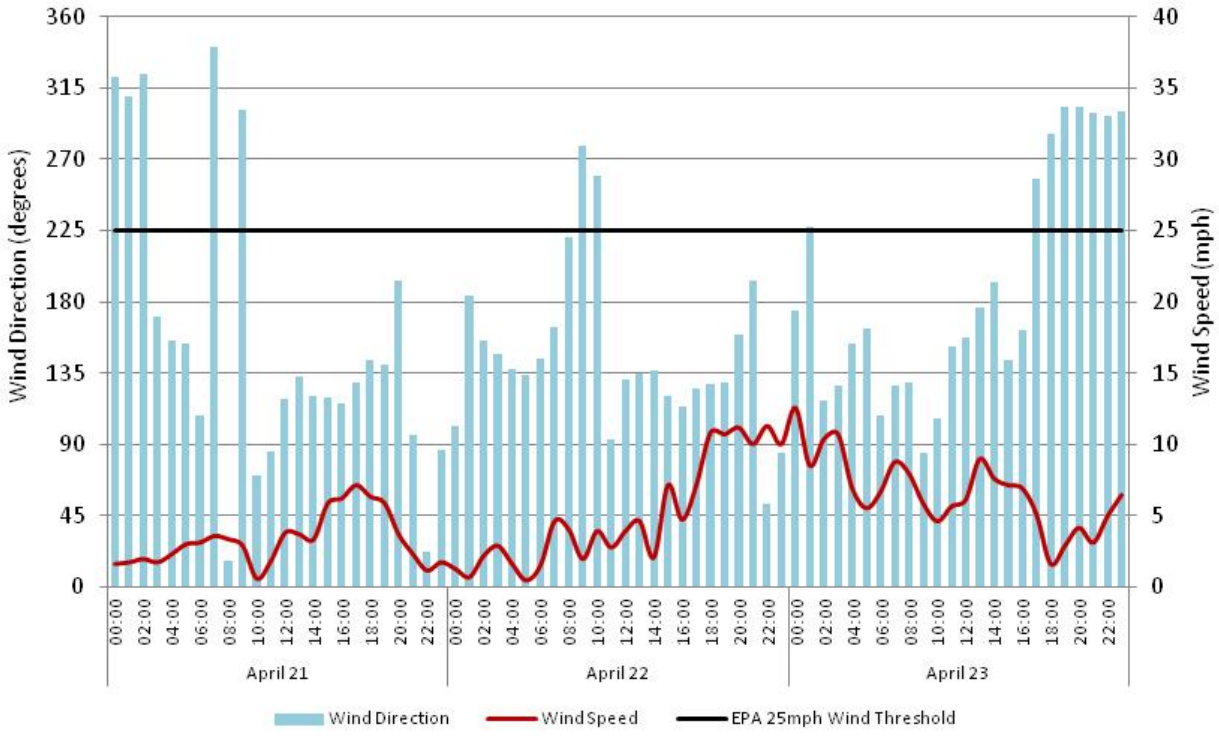
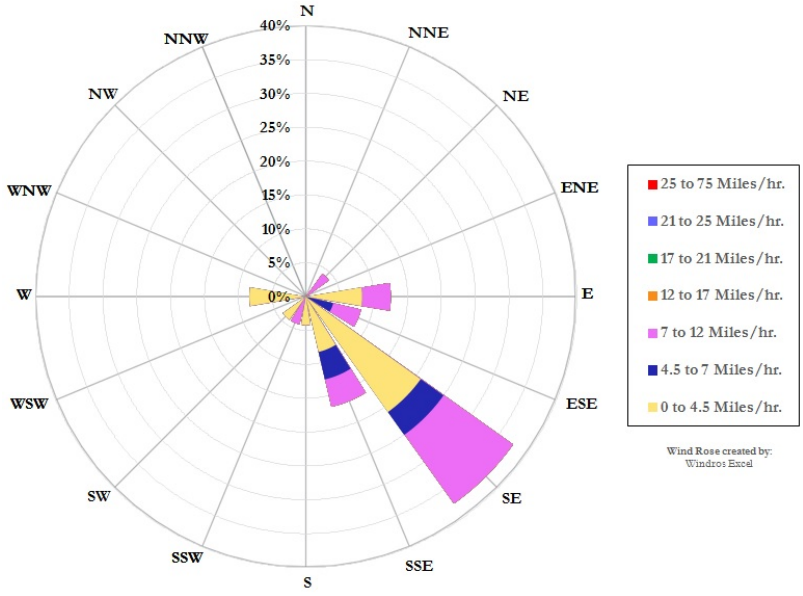


FIGURE B-7
CALEXICO WIND ROSE – APRIL 22, 2016



Figs B-6 & B-7: Although winds did not exceed the 25 mph wind threshold at Calexico, which helps account for its lack of exceedance. Data from the EPA's AQS system

FIGURE B-8
EL CENTRO WIND SPEED & DIRECTION

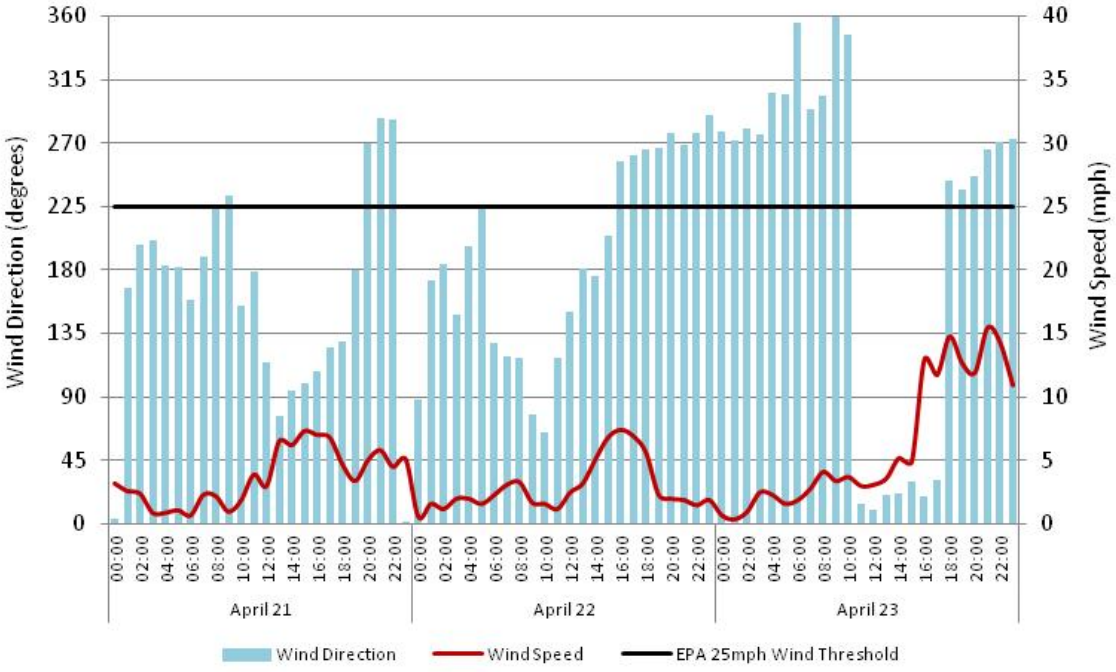
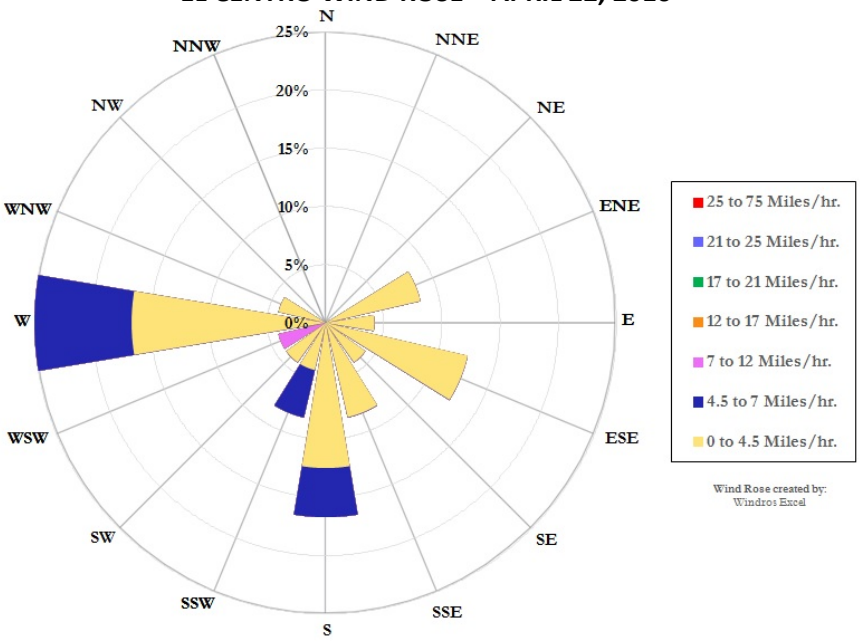


FIGURE B-9
EL CENTRO WIND ROSE – APRIL 22, 2016



Figs B-8 & B-9: Winds did not exceed the 25 mph wind threshold at El Centro, which helps account for its lack of exceedance. Data from the EPA's AQS system

FIGURE B-10
NILAND WIND SPEED & DIRECTION

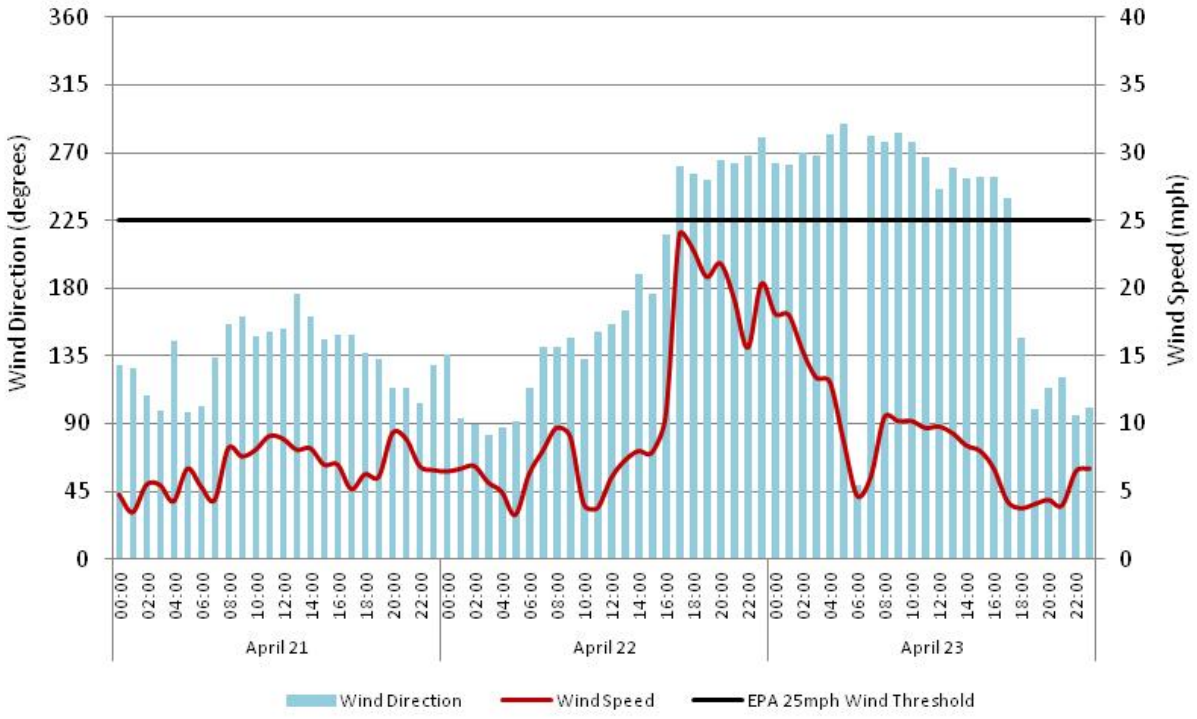
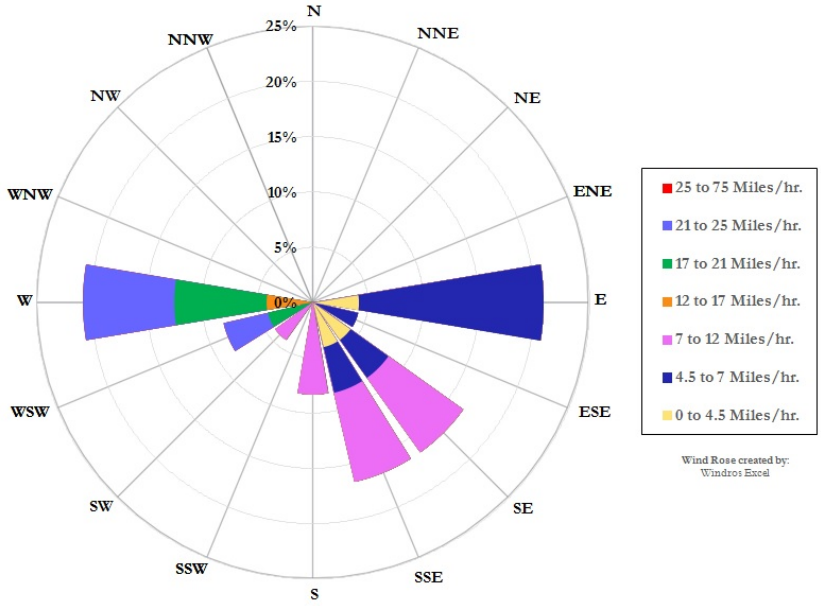


FIGURE B-11
NILAND WIND ROSE – APRIL 22, 2016



Figs B-10 & B-11: Winds exceeded the 25 mph wind threshold at Niland, although it avoided an exceedance. Data from the EPA's AQS system

FIGURE B-12
WESTMORLAND WIND SPEED & DIRECTION

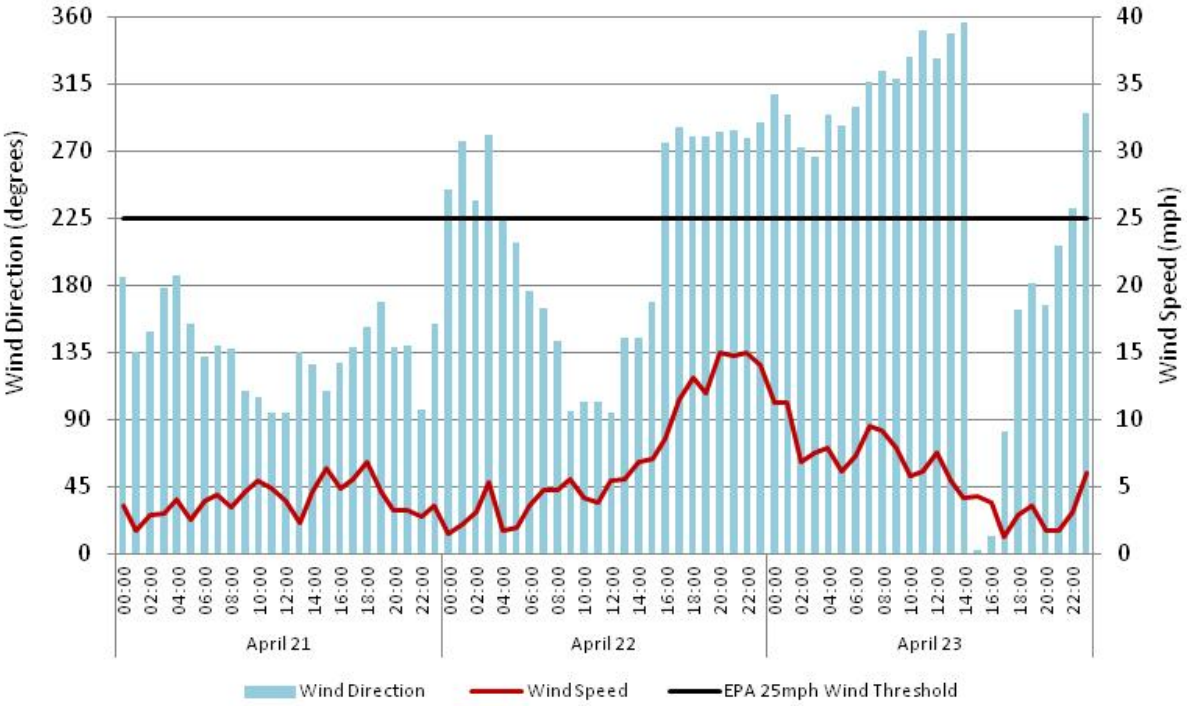
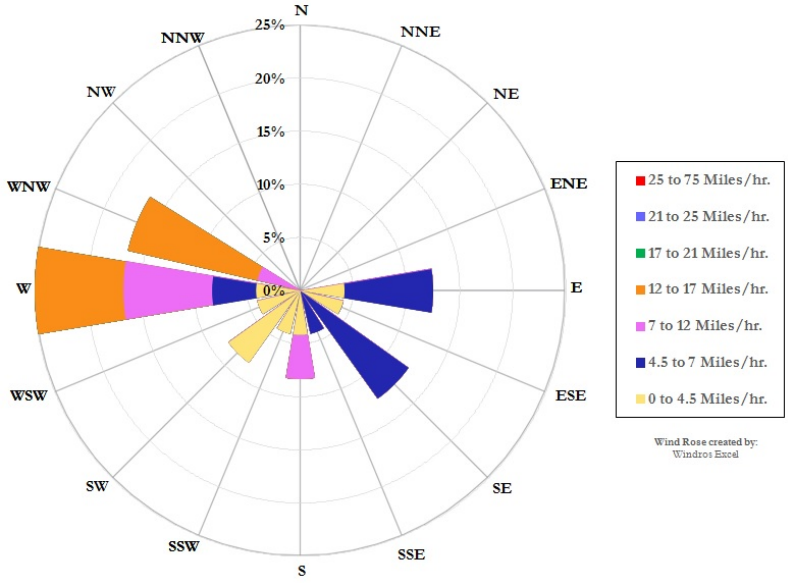


FIGURE B-13
WESTMORLAND WIND ROSE – APRIL 22, 2016



Figs B-12 & B-13: Winds did not exceed the 25 mph wind threshold at Westmorland. However, winds were much higher at upstream sites and transported dust downstream. Data from the EPA's AQS system

EASTERN RIVERSIDE COUNTY AIRPORTS

FIGURE B-14
BLYTHE AIRPORT (KBLH) WIND SPEED, GUSTS & DIRECTION

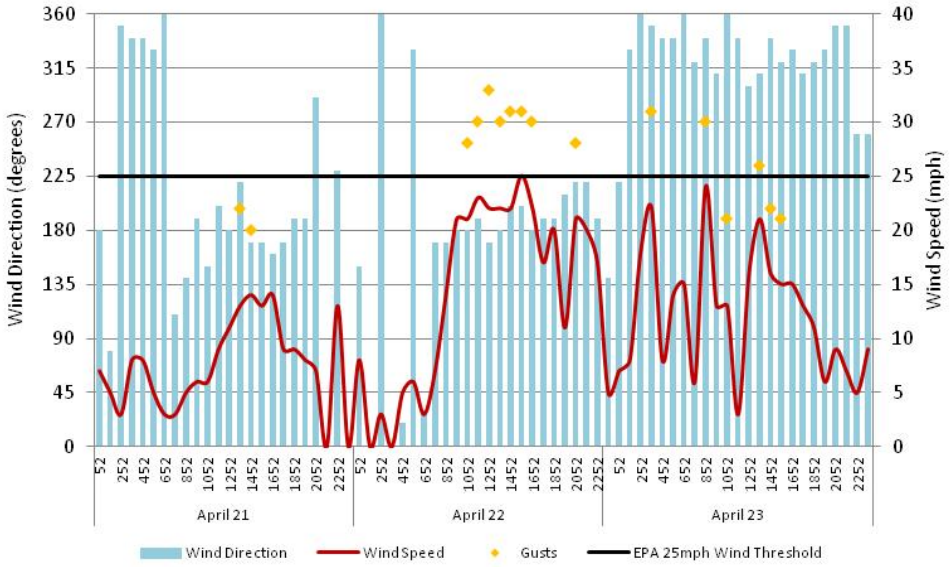


Fig B-14: Winds and gusts were elevated as well which shows the regional extent of the wind event. Data from the NCEI's QCLCD system

FIGURE B-15
DESERT RESORTS (aka J. COCHRAN-THERMAL) AIRPORT (KTRM)
WIND SPEED, GUSTS & DIRECTION

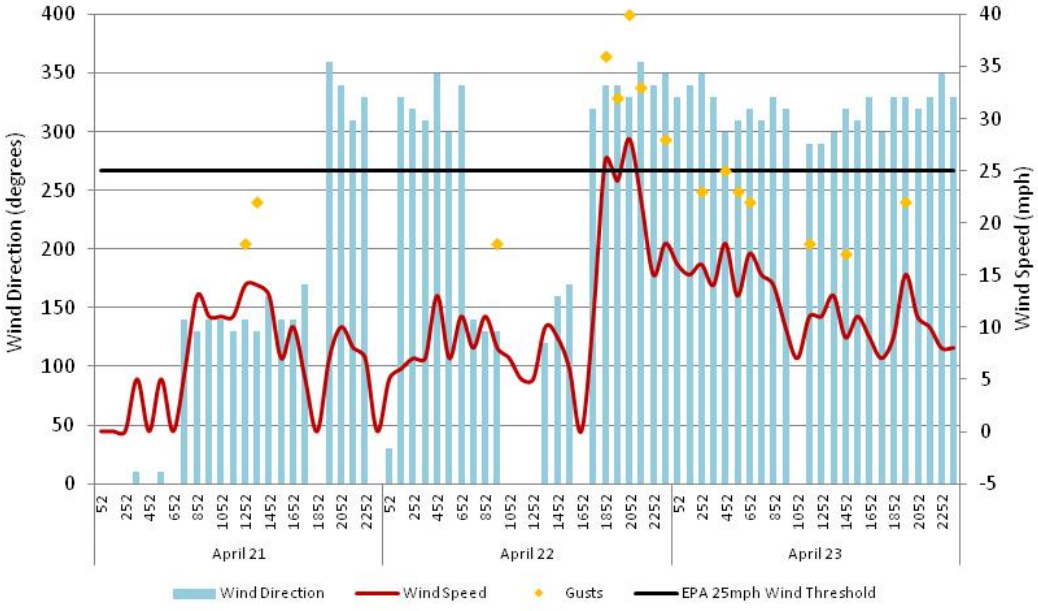


Fig B-15: Winds and gusts were elevated as well which shows the regional extent of the wind event. Data from the NCEI's QCLCD system

FIGURE B-16
PALM SPRINGS INTERNATIONAL AIRPORT (KPSP)
WIND SPEED, GUSTS & DIRECTION

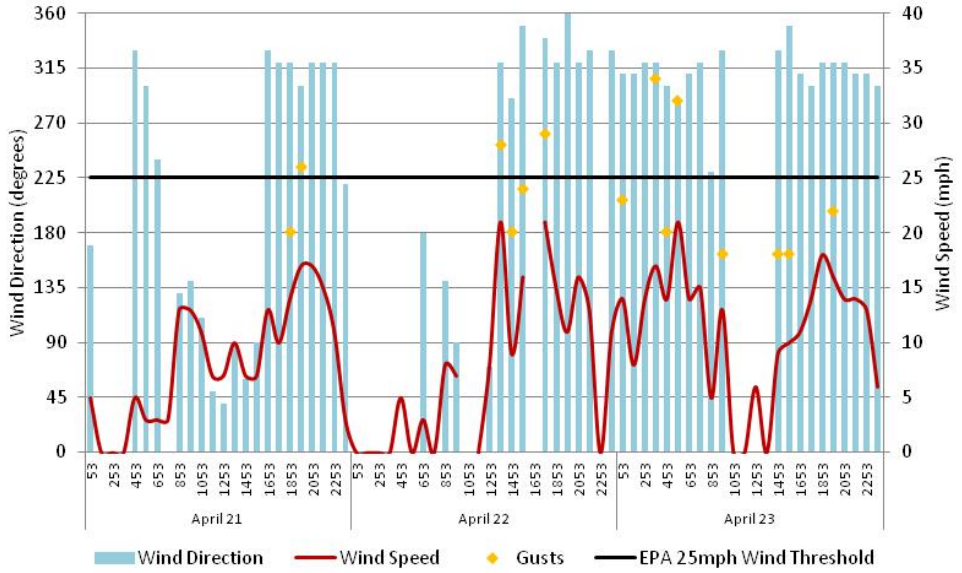


Fig B-16: Winds and gusts were elevated as well which shows the regional extent of the wind event. Data from the NCEI's QCLCD system

SOUTHEASTERN SAN DIEGO COUNTY

FIGURE B-17
CAMPO AIRFIELD (KCZZ) WIND SPEED, GUSTS & DIRECTION

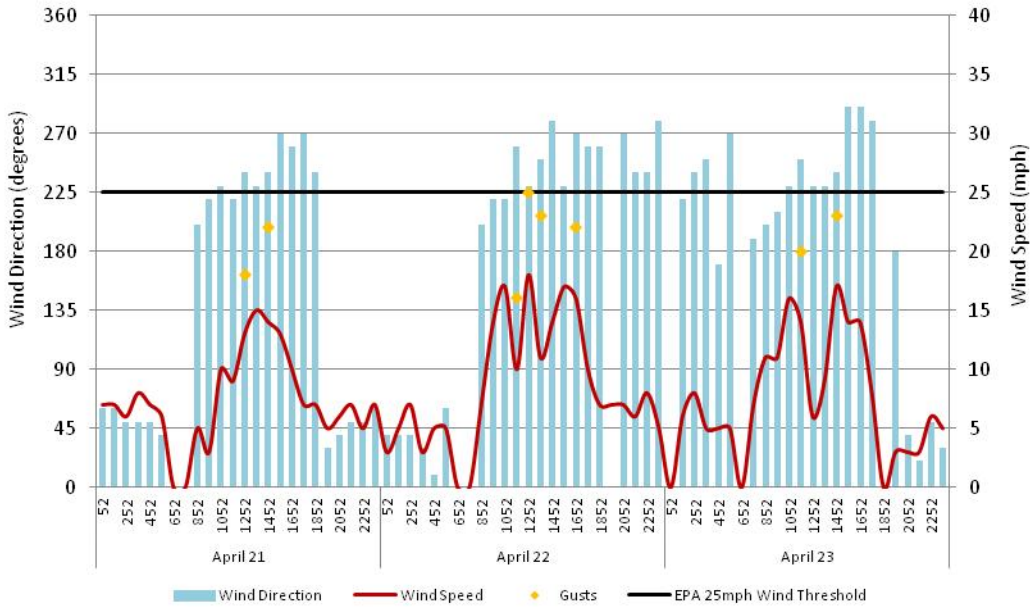


Fig B-17: Winds and gusts at Campo in the mountains were slightly less than the winds measured in Imperial County. Data from the NCEI's QCLCD system

SOUTHWESTERN ARIZONA

FIGURE B-18
YUMA, ARIZONA MCAS (KNYL)
WIND SPEED, GUSTS & DIRECTION

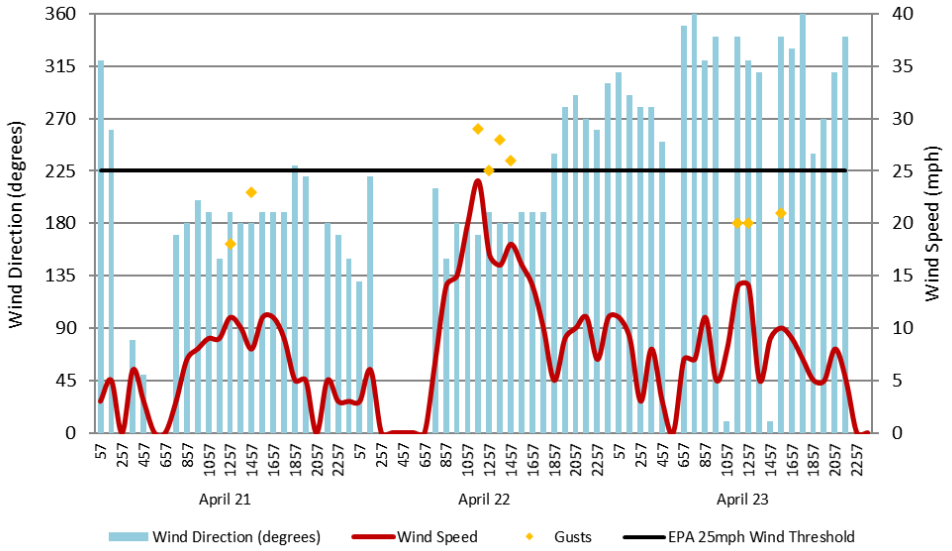


Fig B-18: Winds and gusts at Yuma MCAS were slightly less than the winds measured in Imperial County. Data from the NCEI's QCLCD system

MEXICO

FIGURE B-19
MEXICALI, MEXICO (MMML)
WIND SPEED, GUSTS & DIRECTION

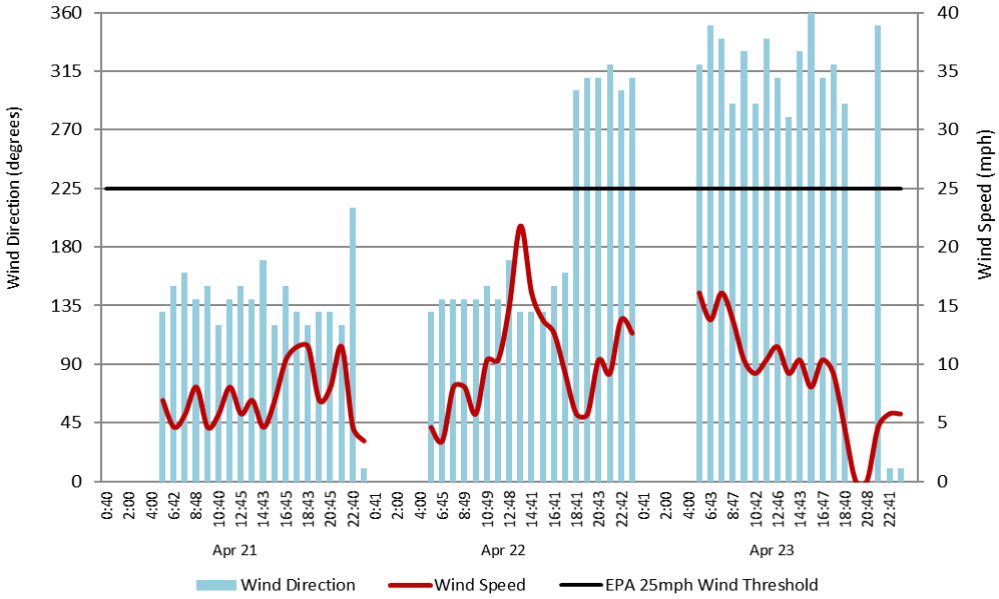
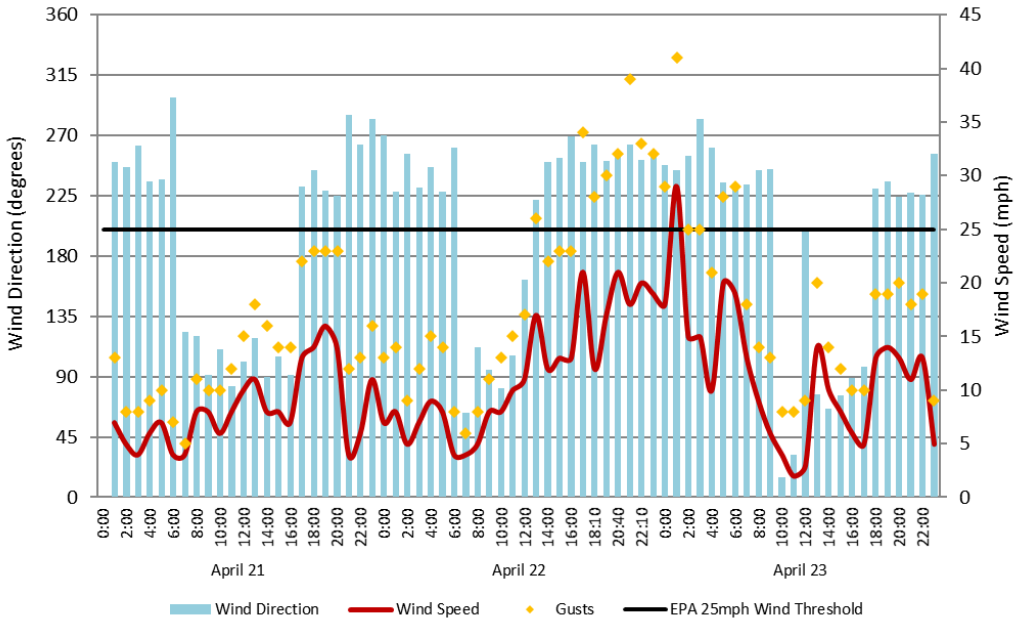


Fig B-19: Winds and gusts at Mexicali Airport were slightly less than the winds measured in Imperial County. Data from the University of Utah's MesoWest system

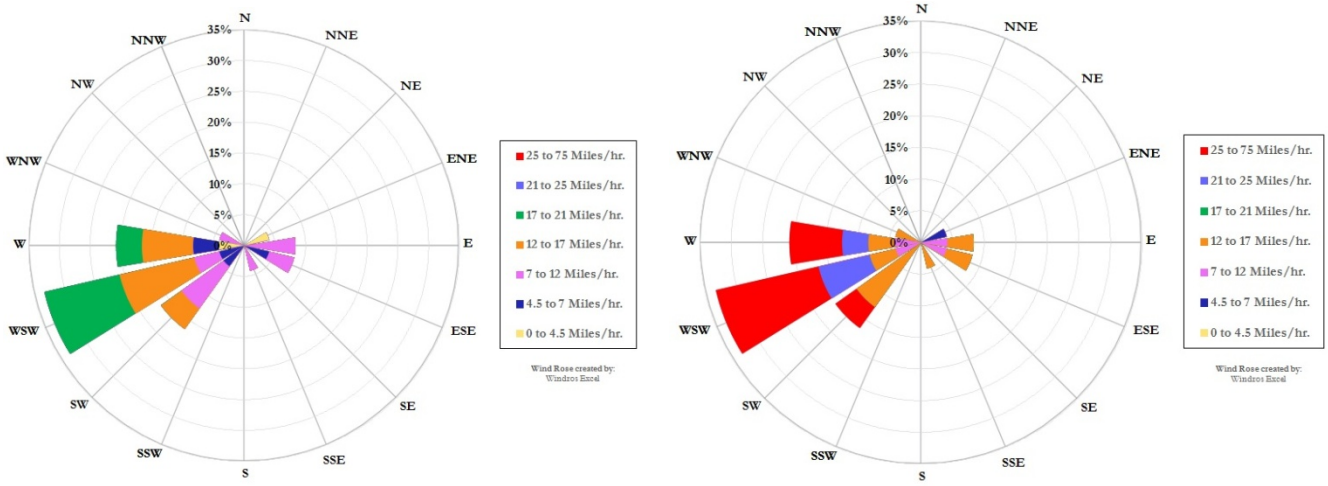
UPSTREAM SITES

The following graphs provide evidence of the elevated wind speeds and confirm the prevailing wind direction at different sites outside Imperial and Riverside Counties.

FIGURE B-20
SUNRISE-OCOTILLO
WIND SPEED, GUSTS & DIRECTION



FIGURES B-21
SUNRISE OCOTILLO WIND ROSE – APRIL 22, 2016



Figs B-20 & B-21: Winds and gusts at Sunrise-Ocotillo (IMPSD; elev. 695 ft) helped transport winds. Gusts played an important role in the transporting windblown dust as noted by difference in wind speeds depicted in the wind roses. Winds only (left image) and gusts only (left image). Data from the University of Utah's MesoWest.

FIGURE B-22
FISH CREEK MOUNTAINS
WIND SPEED, GUSTS & DIRECTION

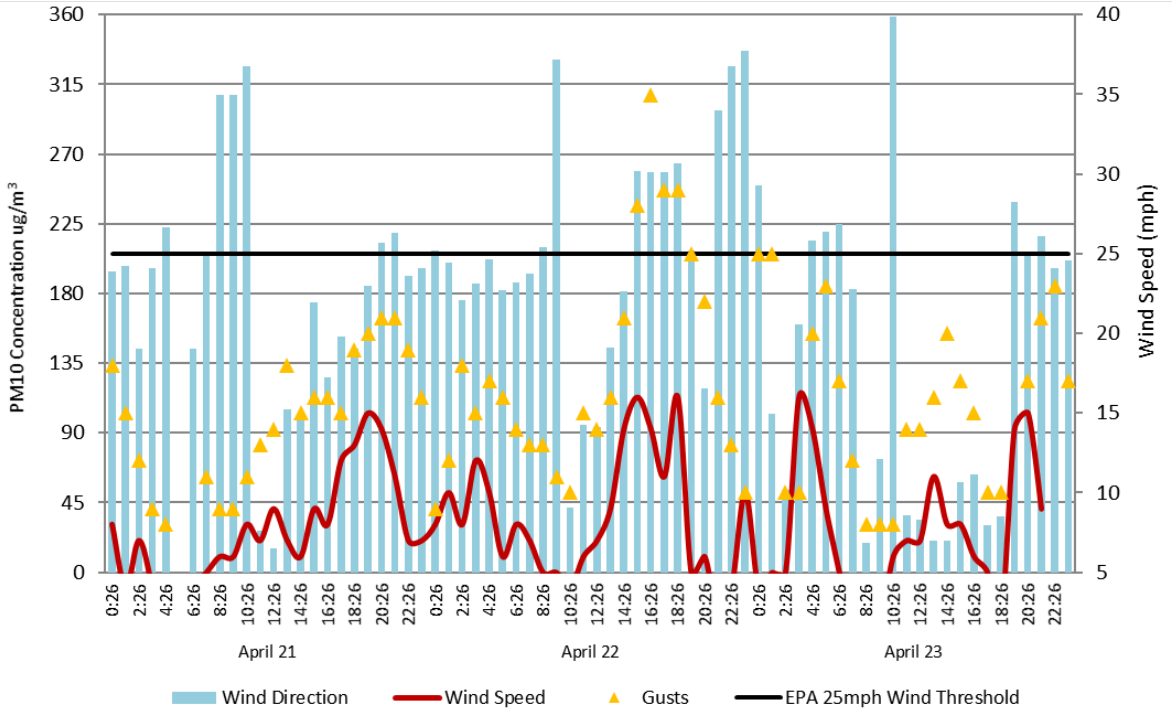
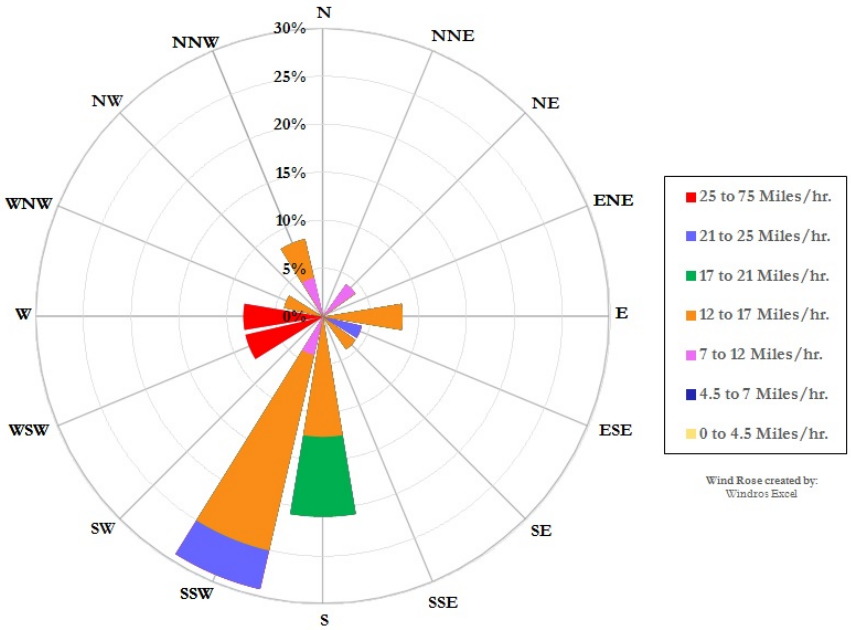


FIGURE B-23
FISH CREEK MTNS. WIND ROSE (GUSTS ONLY) – APRIL 22, 2016



Figs B-22 & B-23: Winds at Fish Creek Mountains (FHCC1; elev. 781 ft) did not exceed the 25 mph wind threshold, although gusts did. Wind rose shows gusts only. Data from the University of Utah's MesoWest

FIGURE B-24
MOUNTAIN SPRINGS GRADE
WIND SPEED, GUSTS & DIRECTION

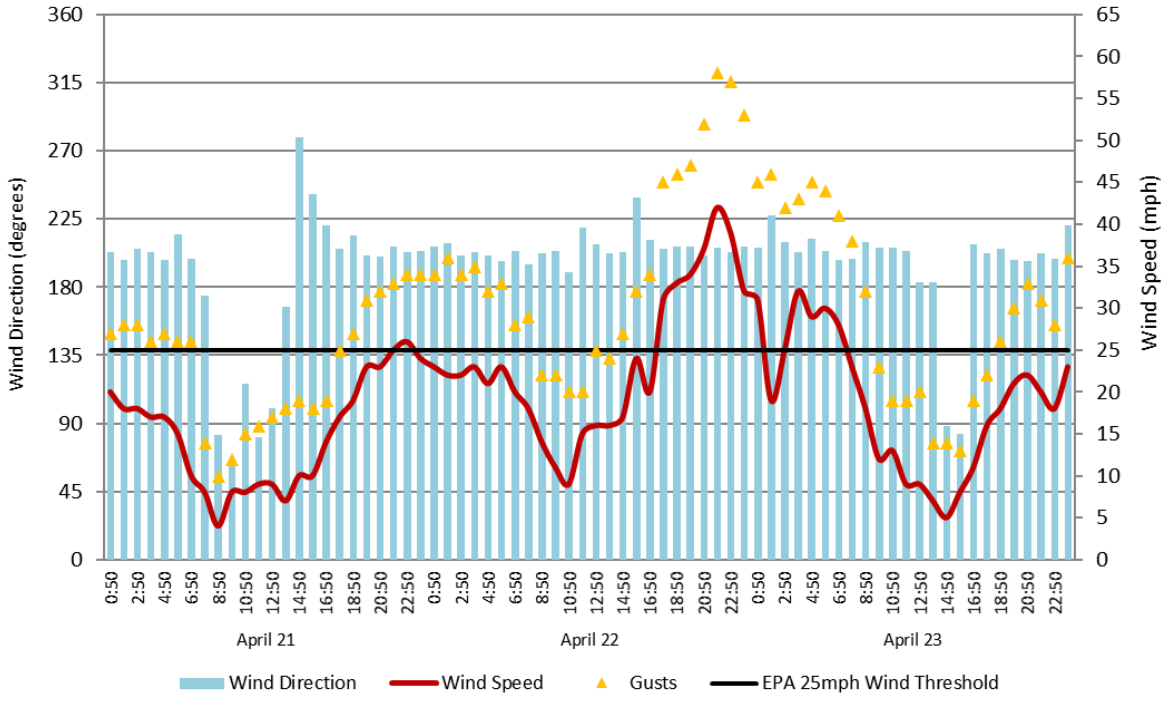
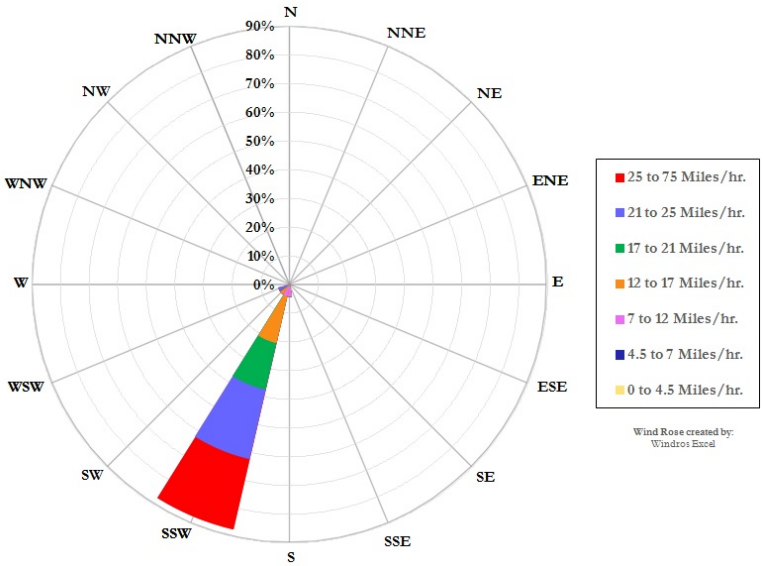


FIGURE B-25
MOUNTAIN SPRINGS GRADE WIND ROSE – APRIL 22, 2016



Figs B-24 & B-25: The elevated winds at Mountain Springs Grade (TNSC1) were instrumental in transporting dust on the western edge of Imperial County near the San Diego County border. Data from the University of Utah's MesoWest

FIGURE B-26
IMPERIAL COUNTY AIRPORT (KIPL) QCLCD DATA

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Elev: -58 ft. Lat: 32.8342° N Lon: -115.5786° W
Station: **IMPERIAL CO AIRPORT, CA US WBAN:03144**

Local Climatological Data
Hourly Observations
April 2016
Generated on 05/25/2017

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Date	Time (LST)	Station Type	Sky Conditions	Visibility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press. Tend	Net 3-Hr Change (inHg)	Sea Level Press. (inHg)	Report Type	Precip Total (in)	Altimeter Setting (inHg)
					AU | AW | MW	(F)	(C)	(F)	(C)	(F)	(C)											
22	0053	7	CLR:00	10.00		70	21.1	61	15.9	41	5.0	35	6	140		29.82	1	-0.00	29.76	FM-15	0.00	29.76
22	0153	7	CLR:00	10.00		69	20.6	60	15.6	37	2.8	31	0	000		29.81			29.75	FM-15	0.00	29.75
22	0253	7	CLR:00	10.00		64	17.8	55	12.9	40	4.4	41	3	240		29.81			29.75	FM-15	0.00	29.75
22	0353	7	CLR:00	10.00		68	20.0	59	15.0	38	3.3	33	7	150		29.83	3	-0.01	29.77	FM-15	0.00	29.77
22	0453	7	CLR:00	10.00		63	17.2	55	12.6	42	5.6	47	5	240		29.83			29.77	FM-15	0.00	29.77
22	0553	7	CLR:00	10.00		66	18.9	57	13.9	41	5.0	40	3	170		29.86			29.80	FM-15	0.00	29.80
22	0653	7	CLR:00	10.00		76	24.4	67	19.3	41	5.0	29	5	130		29.87	3	-0.04	29.81	FM-15	0.00	29.81
22	0753	7	CLR:00	10.00		80	26.7	71	21.7	42	5.6	26	5	130		29.87			29.81	FM-15	0.00	29.81
22	0853	7	CLR:00	10.00		84	28.9	78	25.6	37	2.8	19	6	VRB		29.88			29.82	FM-15	0.00	29.82
22	0953	7	CLR:00	10.00		86	30.0	80	26.7	39	3.9	19	3	120		29.89	3	-0.02	29.83	FM-15	0.00	29.83
22	1053	7	CLR:00	10.00		90	32.2	86	30.0	39	3.9	17	6	080		29.88			29.82	FM-15	0.00	29.82
22	1153	7	CLR:00	10.00		92	33.3	93	33.6	34	1.1	13				29.86			29.80	FM-15	0.00	29.80
22	1253	7	CLR:00	10.00		94	34.4	94	34.4	37	2.8	14	8	VRB		29.85	8	+0.04	29.79	FM-15	0.00	29.79
22	1353	7	CLR:00	10.00		97	36.1	103	39.7	32	0.0	10	10	170	17	29.83			29.77	FM-15	0.00	29.77
22	1453	7	CLR:00	10.00		96	35.6	102	39.1	31	-0.6	10	9	160		29.80			29.75	FM-15	0.00	29.74
22	1553	7	CLR:00	10.00		95	35.0	97	36.2	35	1.7	12	16	250		29.80	6	+0.05	29.74	FM-15	0.00	29.74
22	1653	7	CLR:00	10.00		91	32.8	86	29.9	42	5.6	18	18	250		29.80			29.74	FM-15	0.00	29.74
22	1753	7	CLR:00	10.00		84	28.9	77	25.1	39	3.9	20	24	260	31	29.81			29.75	FM-15	0.00	29.75
22	1853	7	CLR:00	10.00		80	26.7	72	22.2	39	3.9	23	26	250	33	29.82	3	-0.02	29.76	FM-15	0.00	29.76
22	1953	7	CLR:00	10.00		78	25.6	70	21.2	37	2.8	23	23	280	31	29.85			29.80	FM-15	0.00	29.79
22	2053	7	CLR:00	9.00		74	23.3	65	18.2	40	4.4	29	21	260	30	29.88			29.82	FM-15	0.00	29.82
22	2153	7	CLR:00	10.00		71	21.7	62	16.4	41	5.0	34	17	270		29.88	1	-0.06	29.83	FM-15	0.00	29.82
22	2253	7	CLR:00	8.00		70	21.1	61	15.9	40	4.4	34	16	270		29.90			29.85	FM-15	0.00	29.84
22	2336	7	BKN:07 19	10.00		69	20.6	60	15.4	42	5.6	38	17	280		29.91				FM-16		29.85
22	2353	7	OVC:08 19	9.00		70	21.1	61	15.9	42	5.6	37	20	290		29.91			29.85	FM-15	0.00	29.85

FIGURE B-27
EL CENTRO NAF (KNJK) QCLCD DATA

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Elev: -42 ft. Lat: 32.8167° N Lon: -115.6833° W
Station: **EL CENTRO NAF, CA US WBAN:23199**

Local Climatological Data
Hourly Observations
April 2016
Generated on 05/25/2017

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Date	Time (LST)	Station Type	Sky Conditions	Visibility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press. Tend	Net 3-Hr Change (inHg)	Sea Level Press. (inHg)	Report Type	Precip Total (in)	Altimeter Setting (inHg)
					AU | AW | MW	(F)	(C)	(F)	(C)	(F)	(C)											
22	0056	7	CLR:00	10.00									5	020		29.81	3	-0.01	29.82	FM-15	0.00	29.77
22	0156	7	CLR:00	10.00									0	000		29.81			29.82	FM-15	0.00	29.77
22	0256	7	CLR:00	10.00									3	180		29.80			29.81	FM-15	0.00	29.76
22	0356	7	CLR:00	10.00									8	170		29.82	3	-0.01	29.83	FM-15	0.00	29.78
22	0456	7	FEW:02 280	10.00		64	17.7	55	12.9	40	4.4	42	3	200		29.83			29.84	FM-15	0.00	29.79
22	0556	7	FEW:02 280	10.00		66	18.9	57	13.9	39	3.9	37	0	000		29.85			29.86	FM-15	0.00	29.81
22	0656	7	FEW:02 280	9.00		71	21.8	62	16.5	49	9.4	45	6	140		29.87	3	-0.05	29.88	FM-15	0.00	29.83
22	0756	7	FEW:02 280	10.00		78	25.6	70	20.9	39	3.9	25	5	130		29.87			29.88	FM-15	0.00	29.83
22	0856	7	FEW:02 280	10.00		83	28.3	76	24.6	38	3.3	20	7	130		29.88			29.88	FM-15	0.00	29.84
22	0956	7	FEW:02 280	10.00		86	30.0	82	27.5	36	2.2	17	6	VRB		29.89	3	-0.01	29.89	FM-15	0.00	29.85
22	1056	7	FEW:02 280	10.00		87	30.6	87	30.5	30	-1.1	13	5	VRB		29.88			29.88	FM-15	0.00	29.84
22	1156	7	FEW:02 280	10.00		90	32.2	89	31.8	34	1.1	14	6	VRB		29.86			29.86	FM-15	0.00	29.82
22	1256	7	FEW:02 280	10.00		92	33.3	93	33.6	34	1.1	13	7	VRB		29.84	8	+0.04	29.85	FM-15	0.00	29.80
22	1356	7	FEW:02 280	10.00		93	34.0	94	34.6	34	1.1	12	9	VRB		29.82			29.82	FM-15	0.00	29.78
22	1456	7	SCT:04 280	10.00		95	35.0	103	39.5	28	-2.2	9	9	190	20	29.80			29.80	FM-15	0.00	29.76
22	1518	7	SCT:04 280	10.00		96	35.6	106	41.1	27	-2.8	8	21	250		29.80				FM-16	T	29.76
22	1556	7	SCT:04 280	10.00		94	34.4	96	35.6	34	1.1	12	26	240	31	29.80	5	+0.04	29.81	FM-15	T	29.76
22	1656	7	SCT:04 280	10.00		91	32.8	89	31.6	37	2.8	15	24	250	30	29.81			29.81	FM-15	0.00	29.77
22	1756	7	CLR:00	10.00		84	28.9	79	25.9	36	2.2	18	25	250	34	29.82			29.82	FM-15	0.00	29.78
22	1856	7	CLR:00	10.00									30	260	36	29.84	3	-0.04	29.85	FM-15	0.00	29.80
22	1956	7	CLR:00	10.00		76	24.4	67	19.7	38	3.3	25	23	270	32	29.86			29.86	FM-15	0.00	29.82
22	2056	7	CLR:00	8.00									22	260		29.89			29.90	FM-15	0.00	29.85
22	2156	7	CLR:00	10.00									18	260		29.90	1	-0.06	29.91	FM-15	0.00	29.86
22	2256	7	CLR:00	10.00									21	270	30	29.91			29.92	FM-15	0.00	29.87
22	2356	7	FEW:02 25	10.00									18	280		29.91			29.92	FM-15	0.00	29.87